

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 040679-1417

In re patent application of

Kouichi AKABORI et al.

Serial No.: Unassigned

Filed: JAN 11 2001

For: ADAPTIVE CRUISE CONTROL SYSTEM AND METHOD FOR AUTOMOTIVE
VEHICLE WITH INTER-VEHICLE DISTANCE CONTROL FUNCTION

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, Applicants respectfully
request that the following amendments be entered into the application:

IN THE CLAIMS:

Please replace claims 2, 3, 4, 6, 7, 8, 10, and 12 as originally filed with the
following amended claims:

--2. (Amended) An adaptive cruise control system for an automotive vehicle as
claimed in claim 1, wherein the delay providing section provides a dead time for one of the
detected velocities of the vehicle and preceding vehicle which is used to set the target inter-
vehicle distance.

3. (Amended) An adaptive cruise control system for an automotive vehicle as
claimed in claim 2, wherein the delay providing section provides a larger dead time for one
of the detected velocities of the vehicle and preceding vehicle which is used to set the target
inter-vehicle distance as either one of the detected velocities of the vehicle or the preceding
vehicle becomes smaller.

4. (Amended) An adaptive cruise control system for an automotive vehicle as
claimed in claim 2, wherein the delay providing section carries out a low-pass filtering for

one of the velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance and whose value is equal to or lower than a predetermined value.

6. (Amended) An adaptive cruise control system for an automotive vehicle as claimed in claim 5, wherein a time constant of the low-pass filter is set to become larger as one of the detected velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance becomes lower.

7. (Amended) An adaptive cruise control system for an automotive vehicle as claimed in claim 5, wherein the delay providing section carries out a low-pass filtering for one of the detected velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance and whose value is equal to or lower than a predetermined value.

8. (Amended) An adaptive cruise control system for an automotive vehicle as claimed in claim 1, wherein the velocity detecting section comprises: a vehicular velocity detecting section that detects the velocity of the vehicle; and a preceding vehicle velocity detecting section that detects the velocity of the preceding vehicle on the basis of a relative velocity of the vehicle to the preceding vehicle and the velocity of the vehicle.

10. (Amended) An adaptive cruise control system for an automotive vehicle as claimed in claim 9, wherein the delay providing section provides a fifth control number of times previously detected velocity of the preceding vehicle V_{F5} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when a presently detected velocity of the preceding vehicle V_F is equal to or lower than the first predetermined velocity value, provides a fourth control number of times previously detected velocity of the preceding vehicle V_{F4} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the first predetermined velocity value but is equal to or lower than the second predetermined velocity value, provides a third control number of times previously detected velocity of the preceding vehicle V_{F3} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the second predetermined

velocity value but is equal to or lower than the third predetermined velocity value, provides a second control number of times previously detected velocity of the preceding vehicle V_{F2} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the third predetermined velocity value but is equal to or lower than the fourth predetermined velocity value, and provides a once control number of time previously detected preceding vehicle V_{F1} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the detected velocity of the preceding vehicle is higher than the fourth predetermined velocity value but is equal to or lower than the fifth predetermined velocity value.

12. (Amended) An adaptive cruise control system for an automotive vehicle as claimed in claim 6, wherein the time constant T of the low-pass filter is set to give a maximum value T_0 for the detected velocity of the vehicle used to set the target inter-vehicle distance when the detected velocity of the vehicle V_c is zero, is set to becomes smaller as the detected velocity of the vehicle V_c is increased, and is set to give zero when the detected velocity of the vehicle V_c becomes equal to the predetermined value.--


REMARKS

The Examiner is respectfully requested to enter the above amendments prior to examination of the instant application. The amendments are made to correct clerical and grammatical errors. The amendments are also made and to delete the multiple dependencies of Claims 4, 7, and 8 in order to avoid this application incurring a surcharge for the presence of one or more multiple dependent claims. The above amendments and are not deemed to change the scope of the invention. A marked-up version of the claims showing the changes made is attached.

Respectfully submitted,

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Date


Richard L. Schwaab
Registration No. 25,479

FOLEY & LARDNER
3000 K Street, N.W. Suite 500
Washington, D.C. 20007-5109
(202) 672-5300

VERSIONS WITH MARKINGS TO SHOW CHANGES MADE

2. An adaptive cruise control system for an automotive vehicle as claimed in claim 1, wherein the delay providing section provides a dead time for one of the detected velocities of the vehicle and preceding vehicle which is used to set the target inter-vehicle distance.

3. An adaptive cruise control system for an automotive vehicle as claimed in claim 2, wherein the delay providing section provides a larger dead time for one of the detected velocities of the vehicle and preceding vehicle which is used to set the target inter-vehicle distance as either one of the detected velocities of the vehicle or the preceding vehicle becomes smaller.

4. An adaptive cruise control system for an automotive vehicle as claimed in [either] claim 2[or claim 3], wherein the delay providing section carries out a low-pass filtering for one of the velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance and whose value is equal to or lower than a predetermined value.

6. An adaptive cruise control system for an automotive vehicle as claimed in claim 5, wherein a time constant [T] of the low-pass filter is set to become larger as one of the detected velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance becomes lower.

7. An adaptive cruise control system for an automotive vehicle as claimed in [either one of] claim 5[or claim 6], wherein the delay providing section carries out a low-pass filtering for one of the detected velocities of the vehicle and the preceding vehicle which is used to set the target inter-vehicle distance and whose value is equal to or lower than a predetermined value.

8. An adaptive cruise control system for an automotive vehicle as claimed [in any one of the preceding claims 1 through 7] claim 1, wherein the velocity detecting section comprises: a vehicular velocity detecting section that detects the velocity of the vehicle [Vc]; and a preceding vehicle velocity detecting section that detects the velocity of the

preceding vehicle $[V_F]$ on the basis of a relative velocity $[V_r]$ of the vehicle to the preceding vehicle and the velocity of the vehicle.

10. An adaptive cruise control system for an automotive vehicle as claimed in claim 9, wherein the delay providing section provides a fifth control number of times previously detected velocity of the preceding vehicle V_{F5} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when [the] a presently detected velocity of the preceding vehicle V_F is equal to or lower than the first predetermined velocity value, provides a fourth control number of times previously detected velocity of the preceding vehicle V_{F4} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the first predetermined velocity value but is equal to or lower than the second predetermined velocity value, provides a third control number of times previously detected velocity of the preceding vehicle V_{F3} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the second predetermined velocity value but is equal to or lower than the third predetermined velocity value, provides a second control number of times previously detected velocity of the preceding vehicle V_{F2} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the presently detected velocity of the preceding vehicle V_F is higher than the third predetermined velocity value but is equal to or lower than the fourth predetermined velocity value, and provides a once control number of time previously detected preceding vehicle V_{F1} for the detected velocity of the preceding vehicle V_{FF} used to set the target inter-vehicle distance when the detected velocity of the preceding vehicle is higher than the fourth predetermined velocity value but is equal to or lower than the fifth predetermined velocity value.

12. An adaptive cruise control system for an automotive vehicle as claimed in claim [7] 6, wherein the time constant T of the low-pass filter is set to give a maximum value T_0 for the detected velocity of the vehicle used to set the target inter-vehicle distance when the detected velocity of the vehicle V_c is zero, is set to becomes smaller as the detected velocity of the vehicle V_c is increased, and is set to give zero when the detected velocity of the vehicle V_c becomes equal to the predetermined value.